## TECHNICAL DATA SHEET 4199, REV. -

# TRANSIENT VOLTAGE SUPPRESSOR 5000 WATT SERIES GLASS PASSIVATED DIE/CELL

### FEATURES

- 5000W peak pulse power dissipation
- Glass passivated junction
- Low incremental surge resistance
- Excellent clamping capability
- Repetition rate (duty cycle): 0.05%
- Fast response time: typically less than 1.0 ps
- Typical IR less than 1µA above 10V

### APPLICATIONS

- ✓ Power Supply Surge Protection
- ✓ Data Link Surge Protection
- ✓ Lightning Transient Suppression
- ✓ Electrostatic Protection

DESCRIPTION

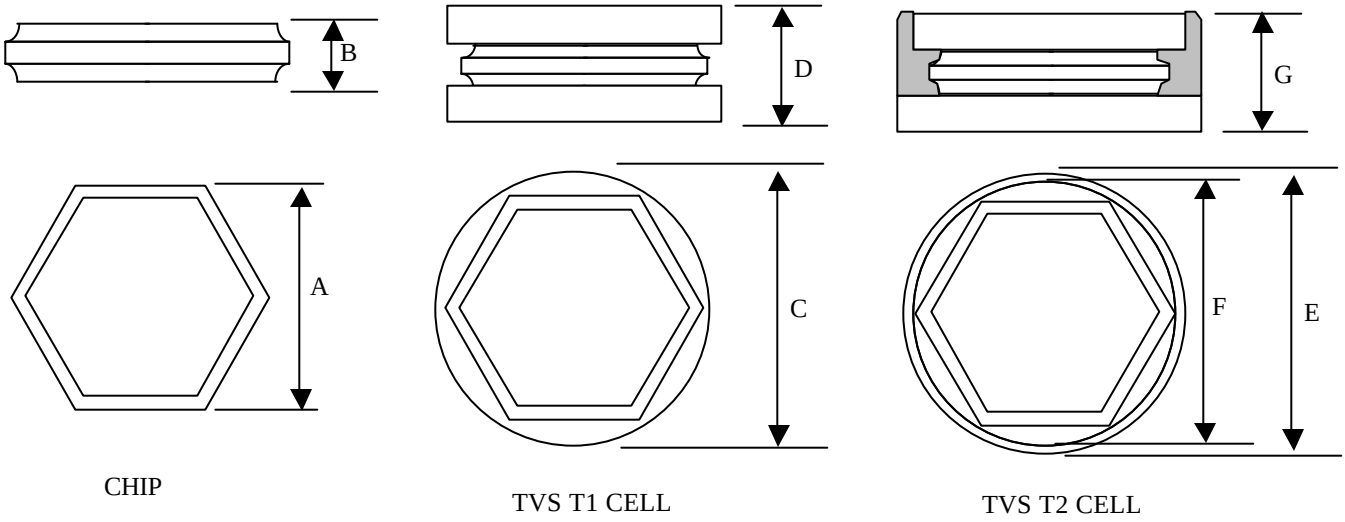
This is a transient voltage suppressor series extending from 5.0 volts to 100 volts. It is available in either uni-directional or bi-directional configurations.

The cell version is available in a Type 1 configuration with double tabs. A Type 2 configuration with silicone edge protection protecting the edge of the die and the die cavity between the double tabs is also available as a custom option.

### ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | Test Conditions | Min | TYP | Max | Unit |
|---|---|---|---|---|---|---|
| Peak Pulse Power | Pppm | TA = 25 8C, Tp = 1 ms (Note 1) | 5000 | | | Watts |
| Electrical Parameters | | | | See Table | | |
| Maximum Solder Temperature | Tmax | 10 Second exposure | | | 250 | 8C |
| Operating & Storage Temperature | | Tj, Tstg | -55 | | 175 | 8C |

Note 1: Non-repetitive current pulse, per Fig. 3 and derated above TA = 25 8C per Fig. 2.




CHIP TVS T1 CELL TVS T2 CELL

| A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 220 | 13.5 | 277 | 98 | 305 | 277 | 98 |

Note 1: All dimension in MIL

Note 2: The dimension is for low voltage parts (<40V) only. The dimension B, D and G will be larger for high voltage parts (>40V).

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Note 2: Die only configuration requires user to provide adequate energy absorption.

### SEN-R-1050-XXX 5000 Watt TVS Series

| Part Number | $V_r$ (V) | Vz min @ Iz (V) | Vz max @ Iz (V) | Iz (mA) | Vcc (V) | Ip (A) | Ir max @ $V_r$ (uA) |
|---|---|---|---|---|---|---|---|
| SEN-R-1050-001 | 5.0 | 6.40 | 7.00 | 50 | 9.2 | 544.0 | 10000 |
| SEN-R-1050-002 | 6.0 | 6.67 | 7.37 | 50 | 10.3 | 486.0 | 10000 |
| SEN-R-1050-003 | 6.5 | 7.22 | 7.98 | 50 | 11.2 | 447.0 | 4000 |
| SEN-R-1050-004 | 7.0 | 7.78 | 8.60 | 50 | 12.0 | 417.0 | 2000 |
| SEN-R-1050-005 | 7.5 | 8.33 | 9.21 | 5 | 12.9 | 388.0 | 500 |
| SEN-R-1050-006 | 8.0 | 8.89 | 9.83 | 5 | 13.6 | 368.0 | 300 |
| SEN-R-1050-007 | 8.5 | 9.44 | 10.40 | 5 | 14.4 | 348.0 | 100 |
| SEN-R-1050-008 | 9.0 | 10.00 | 11.10 | 5 | 15.4 | 325.0 | 40 |
| SEN-R-1050-009 | 10.0 | 11.10 | 12.30 | 5 | 17.0 | 295.0 | 30 |
| SEN-R-1050-010 | 11.0 | 12.20 | 13.50 | 5 | 18.2 | 275.0 | 10 |
| SEN-R-1050-011 | 12.0 | 13.30 | 14.70 | 5 | 19.9 | 252.0 | 10 |
| SEN-R-1050-012 | 13.0 | 14.40 | 15.90 | 5 | 21.5 | 233.0 | 10 |
| SEN-R-1050-013 | 14.0 | 15.60 | 17.20 | 5 | 23.2 | 216.0 | 10 |
| SEN-R-1050-014 | 15.0 | 16.70 | 18.50 | 5 | 24.4 | 205.0 | 10 |
| SEN-R-1050-015 | 16.0 | 17.80 | 19.70 | 5 | 26.0 | 193.0 | 10 |
| SEN-R-1050-016 | 17.0 | 18.90 | 20.90 | 5 | 27.6 | 181.0 | 10 |
| SEN-R-1050-017 | 18.0 | 20.00 | 22.10 | 5 | 29.2 | 172.0 | 10 |
| SEN-R-1050-018 | 20.0 | 22.20 | 24.50 | 5 | 32.4 | 154.0 | 10 |
| SEN-R-1050-019 | 22.0 | 24.00 | 26.90 | 5 | 35.5 | 141.0 | 10 |
| SEN-R-1050-020 | 24.0 | 26.70 | 29.50 | 5 | 38.9 | 129.0 | 10 |
| SEN-R-1050-021 | 26.0 | 28.90 | 31.90 | 5 | 42.1 | 119.0 | 10 |
| SEN-R-1050-022 | 28.0 | 31.10 | 34.40 | 5 | 45.4 | 110.0 | 10 |
| SEN-R-1050-023 | 30.0 | 33.30 | 36.80 | 5 | 48.4 | 103.0 | 10 |
| SEN-R-1050-024 | 33.0 | 36.70 | 40.60 | 5 | 53.3 | 93.9 | 10 |
| SEN-R-1050-025 | 36.0 | 40.00 | 44.20 | 5 | 58.1 | 86.1 | 10 |
| SEN-R-1050-026 | 40.0 | 44.40 | 49.10 | 5 | 64.5 | 77.6 | 10 |
| SEN-R-1050-027 | 43.0 | 47.80 | 52.80 | 5 | 69.4 | 72.1 | 10 |
| SEN-R-1050-028 | 45.0 | 50.00 | 55.30 | 5 | 72.7 | 68.8 | 10 |
| SEN-R-1050-029 | 48.0 | 53.30 | 58.90 | 5 | 77.4 | 64.7 | 10 |
| SEN-R-1050-030 | 51.0 | 56.70 | 62.70 | 5 | 82.4 | 60.7 | 10 |
| SEN-R-1050-031 | 54.0 | 60.00 | 66.30 | 5 | 87.1 | 57.5 | 10 |
| SEN-R-1050-032 | 58.0 | 64.40 | 71.20 | 5 | 93.6 | 53.5 | 10 |
| SEN-R-1050-033 | 60.0 | 66.70 | 73.70 | 5 | 96.8 | 51.7 | 10 |
| SEN-R-1050-034 | 64.0 | 71.10 | 78.60 | 5 | 103.0 | 48.6 | 10 |
| SEN-R-1050-035 | 70.0 | 77.80 | 86.00 | 5 | 113.0 | 44.3 | 10 |
| SEN-R-1050-036 | 75.0 | 83.30 | 92.10 | 5 | 121.0 | 41.4 | 10 |
| SEN-R-1050-037 | 78.0 | 86.70 | 95.80 | 5 | 126.0 | 39.7 | 10 |
| SEN-R-1050-038 | 85.0 | 94.40 | 104.00 | 5 | 137.0 | 36.5 | 10 |
| SEN-R-1050-039 | 90.0 | 100.00 | 111.00 | 5 | 146.0 | 34.3 | 10 |
| SEN-R-1050-040 | 100.0 | 110.00 | 123.00 | 5 | 162.0 | 30.9 | 10 |
| SEN-R-1050-041 | 110.0 | 122.00 | 135.00 | 5 | 177.0 | 28.3 | 10 |
| SEN-R-1050-042 | 120.0 | 133.00 | 147.00 | 5 | 193.0 | 26.0 | 10 |
| SEN-R-1050-043 | 130.0 | 144.00 | 159.00 | 5 | 209.0 | 24.0 | 10 |
| SEN-R-1050-044 | 150.0 | 167.00 | 185.00 | 5 | 243.0 | 20.6 | 10 |
| SEN-R-1050-045 | 160.0 | 178.00 | 197.00 | 5 | 259.0 | 19.3 | 10 |
| SEN-R-1050-046 | 170.0 | 189.00 | 209.00 | 5 | 275.0 | 18.2 | 10 |
| SEN-R-1050-047 | 180.0 | 200.00 | 233.00 | 5 | 289.0 | 17.3 | 10 |

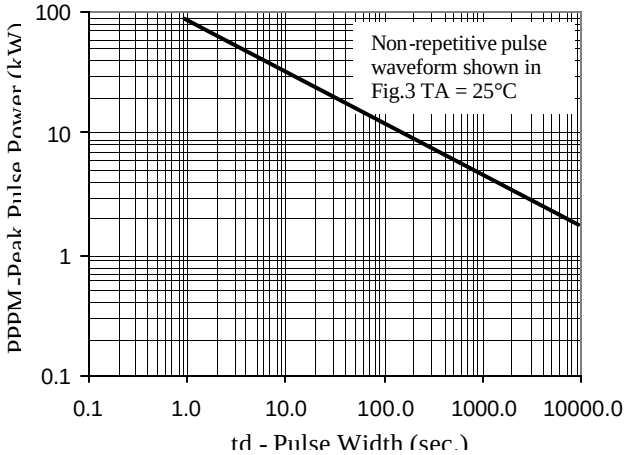


Fig. 1 - Peak Pulse Power Rating Curve

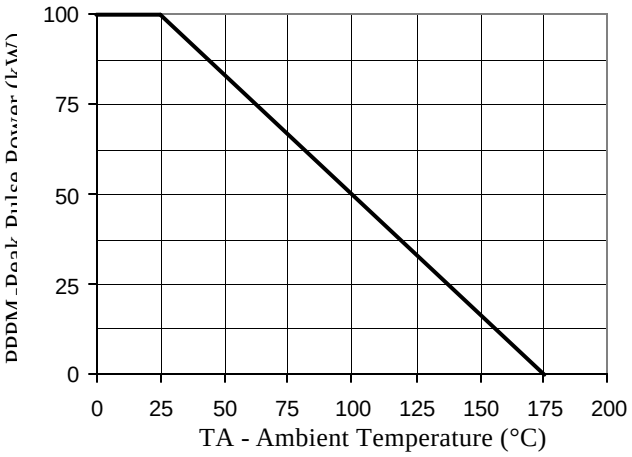


Fig.2 - Pulse Derating Curve

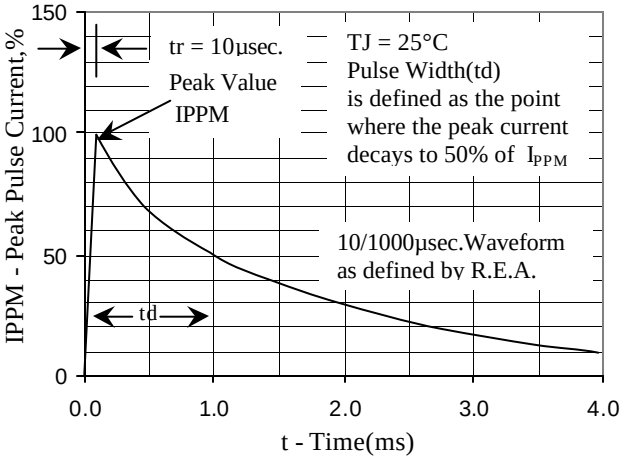


Fig.3 - Pulse Waveform

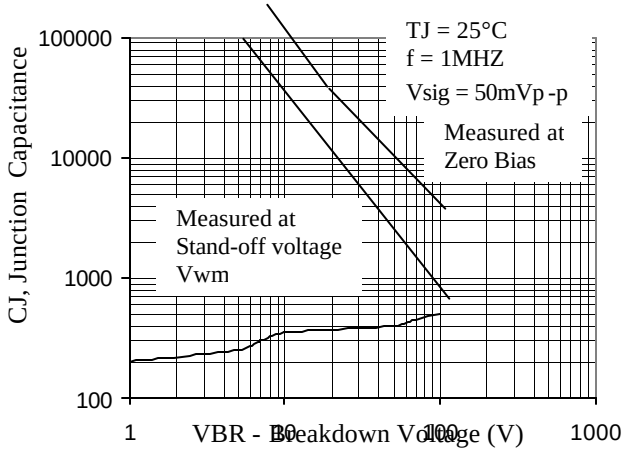


Fig. 4 - Typical Junction Capacitance

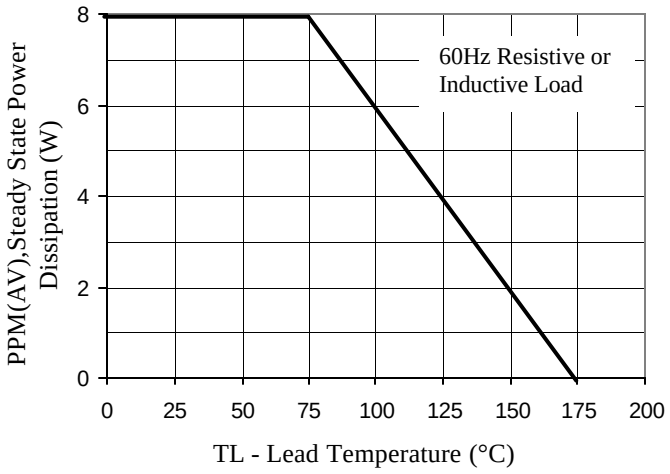


Fig. 5 - Steady State Power Derating Curve

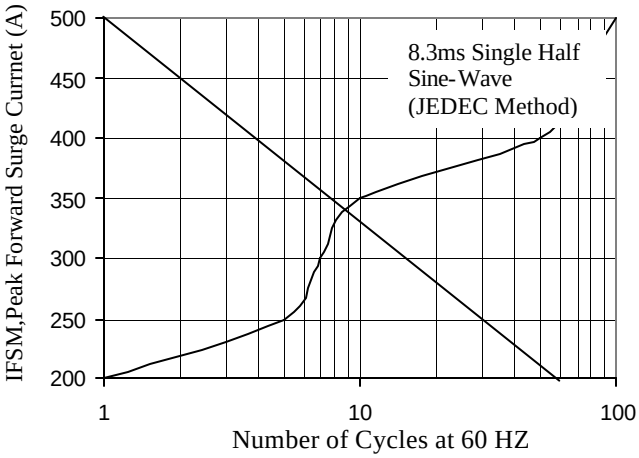


Fig.6 - Maximum Non-repetitive Forward Surge current

**TECHNICAL DATA**

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